WHAT IS CLAIMED IS:

1. An assembly for making an electrofusion weld joint, comprising:

a meltable member;

at least one fastener; and

a heating element secured to said meltable member by said at least one fastener.

2. The assembly of claim 1, wherein said at least one fastener partially surrounds a portion of said heating element and extends through at least a portion of a predetermined melt zone of said meltable member into a non-melt zone of said meltable member to prevent substantial movement of said heating element when said predetermined melt zone is molten.

3. The assembly of claim 1, wherein said heating element is substantially S-shaped.

4. The assembly of claim 1, wherein said heating element is substantially V-shaped.

5. The assembly of claim 3, wherein said at least one fastener secures said heating element to said meltable member at each bend of said substantially S-shaped heating element.

6. The assembly of claim 1, wherein said meltable member is made of a thermoplastic material.

7. The assembly of claim 1, wherein said meltable member is a pipe having a bell end.

8. The assembly of claim 7, wherein said bell end of said pipe is tapered.

9. The assembly of claim 8, wherein said taper is about 3 to 10 degrees.

10. The assembly of claim 1, wherein said meltable member is a pipe having a spigot end.

11. The assembly of claim 1, wherein said meltable member is a fitting having first and second ends for receiving first and second pipes.

12. The assembly of claim 11, wherein at least one of said first and second ends of said fitting is tapered.

13. The assembly of claim 12, wherein said taper is about 3 to 10 degrees.

14. An apparatus for making an electrofusion weld joint, comprising:

a heating element having a substantially zigzag shape, said substantially zigzag shape having a plurality of bends.

15. The apparatus of claim 14, wherein said bends are angular.

16. The apparatus of claim 14, wherein said bends are rounded.

17. A pipe assembly for making an electrofusion joint, comprising:

a pipe having a first end and a second end; and

a heating element for creating a predetermined melt zone in said pipe proximal said heating element when said heating element is supplied with electrical current;

said heating element being attached to said first end of said pipe by at least one fastener;

said at least one fastener at least partially surrounding a portion of said heating element and extending through said predetermined melt zone of said pipe into a non-melt zone portion of said pipe to prevent substantial movement of said heating element when said predetermined melt zone is molten.

18. The pipe assembly of claim 17, wherein said first pipe end is a bell end.

19. The pipe assembly of claim 18, further comprising a second pipe having a spigot end received by said bell end for making an electrofusion joint.

20. The pipe assembly of claim 17, wherein said bell end of said pipe is tapered.

21. The pipe assembly of claim 20, wherein said taper is about 3 to 10 degrees.

22. The pipe assembly of claim 17, wherein said first pipe end is a spigot end.

23. The pipe assembly of claim 22, further comprising a second pipe having a bell end for receiving said spigot end for making an electrofusion joint.

24. The pipe assembly of claim 23, wherein said bell end of said second pipe is tapered.

25. The pipe assembly of claim 24, wherein said taper is about 3 to 10 degrees.

26. An assembly for making an electrofusion joint, comprising:

a first pipe having a spigot end;

a second pipe having a bell end for receiving said spigot end of said first pipe;

a heating element attached to said bell end of said second pipe or to said spigot end of said first pipe for creating a melt zone having a melt zone portion in each of said first and second pipes proximal said heating element when supplying said heating element with electrical current; and

at least one fastener at least partially surrounding said heating element and extending through said melt zone portion of said pipe to which said heating element is attached and into a non-melt

zone of said pipe in which said heating element is attached to prevent substantial movement of said heating element when supplying said heating element with electrical current for making said electrofusion joint.

27. The assembly of claim 26, wherein said heating element has a substantially zigzag shape.

28. The assembly of claim 26, wherein said heating element has a substantially helical shape.

29. The assembly of claim 26, wherein said first and second pipes are formed of thermoplastic polymers.

30. The assembly of claim 26, wherein said at least one fastener is metallic.

31. The assembly of claim 26, wherein said bell end of said second pipe is tapered to facilitate receiving said spigot end of said first pipe.

32. The assembly of claim 31, wherein said taper is substantially 3 to 10 degrees.

33. The assembly of claim 26, wherein at least two heating elements are embedded in said spigot end of said first pipe or in said bell end of said second pipe for creating said melt zone proximal each of said heating elements when supplying power to each of said at least two heating elements for making said electrofusion joint.

34. The assembly of claim 26, wherein said first and second pipes have a diameter of at least eighteen inches.

35. An assembly for making an electrofusion joint, comprising:

a first pipe and a second pipe to be connected;

a fitting having first and second ends adapted for receiving said first and second pipes;

a heating element embedded in each of said first and second fitting ends for creating a predetermined melt zone proximal said heating element when supplying said heating element with electrical current; and

at least one fastener extending through said predetermined melt zone into a non-melt zone portion of said fitting for securing said heating element in said first and second ends of said fitting to prevent substantial movement of said heating elements when said predetermined melt zone is molten.

36. The assembly of claim 35, wherein said heating element has a substantially zigzag shape.

37. The assembly of claim 35, wherein said heating element has a substantially helical shape.

38. The assembly of claim 35, wherein said first and second pipes are formed of thermoplastic polymers.

39. The assembly of claim 35, wherein said fitting is formed of a thermoplastic polymer.

40. The assembly of claim 35, wherein said at least one fastener is metallic.

41. The assembly of claim 35, wherein said first and second ends of said fitting are tapered to facilitate receiving said first and second pipes.

42. The assembly of claim 41, wherein said taper is about 3 to 10 degrees.

43. The assembly of claim 35, wherein a plurality of heating elements are embedded in each of said first and second fitting ends for creating said melt zone proximal each of said plurality of heating elements when supplying each of said plurality of heating elements with power.

44. The assembly of claim 35, wherein said first and second pipes have a diameter of at least about eighteen inches.

45. A method of forming an electrofusion joint, comprising:
providing a first pipe having a spigot end;
providing a second pipe having a bell end;
embedding a heating element and a plurality of fasteners in either said spigot end of said first pipe or in said bell end of said second pipe, said at least one fastener extending through a

predetermined melt zone into a non-melt zone portion of said embedded pipe;

inserting said spigot end of said first pipe into said bell end of said second pipe;

creating a predetermined melt zone proximal said heating element by supplying electrical current to said heating element, said heating element being prevented from substantially moving when said predetermined melt zone is molten by said at least one fastener extending through said melt zone and into said non-melt zone of said embedded pipe; and

terminating said supply of electrical current to said heating element to fuse said first and second pipes together.

46. The method according to claim 45, wherein embedding a heating element and a plurality of fasteners further comprises:

positioning said heating element within an inserting ring;

positioning said inserting ring within said spigot end of said first pipe or in said bell end of said second pipe;

inserting at least one of said at least one fastener to initially fix said heating element to said pipe;

removing said inserting ring;

inserting remaining plurality of fasteners to securely fix said heating element within pipe;

inserting a welding ring within said pipe in which said heating element is securely fixed;

heating said welding ring to soften said pipe end proximal said welding ring, thereby causing said heating element and said plurality of fasteners to sink into softened pipe;

terminating said heating of said welding ring, thereby embedding said heating element and said plurality of fasteners in said pipe; and

removing said welding ring.

47. The method according to claim 45, wherein providing a second pipe having a bell end comprises providing said second pipe having a tapered bell end.

48. The method according to claim 47, wherein providing said second pipe having a tapered bell end comprises providing said tapered bell end with a taper of about 3 to 10 degrees.

49. The method according to claim 47, further comprising positioning a tensioning ring around said bell end of said second pipe; and

forcing said bell end of said second pipe proximal said first pipe with said tensioning ring.

50. The method according to claim 49, further comprising positioning a support member within said first and second pipes before forcing said bell end of said second pipe proximal said first pipe for supporting said first and second pipes while applying said force with said tensioning ring.

51. The method according to claim 45, wherein providing said first and second pipes comprises providing said first and second pipes having diameters of at least eighteen inches.

52. A method of forming an electrofusion joint, comprising:

providing a first pipe;

providing a second pipe;

providing a fitting having a first end and a second end adapted for receiving said first and second pipes;

embedding a heating element and at least one fastener in each of said first and second ends of said fitting, said at least one fastener extending through a predetermined melt zone into a non-melt zone portion of said fitting;

inserting said first pipe in said first fitting end;

inserting said second pipe in said second fitting end;

creating a predetermined melt zone proximal each of said heating elements by supplying electrical current to each of said heating elements, said heating elements being prevented from substantially moving when predetermined melt zone is molten by said at least one fastener extending through said predetermined melt zone into said non-melt zone portion of said fitting; and

terminating said supplying electrical current to said heating elements to fuse said fitting and said first and second pipes together.

53. The method according to claim 52, wherein embedding a heating element comprises:

(a) positioning a first heating element within an inserting ring;

(b) positioning said inserting ring within said first end of said fitting;

(c) inserting at least one of said plurality of fasteners to initially fasten said first heating element to said first end of said fitting;

(d) removing said inserting ring;

(e) inserting remaining plurality of fasteners to secure said first heating element within said first end of said fitting;

(f) inserting a welding ring in said first end of said fitting;

(g) heating said welding ring to melt said fitting proximal said welding ring, thereby causing said first heating element and said plurality of fasteners to sink into said melted fitting;

(h) cooling said fitting, thereby embedding said first heating element and said plurality of fasteners within said fitting;

(i) removing said welding ring; and

(j) repeating steps (a) through (i) for embedding a second heating element in said second end of said fitting.

54. The method according to claim 52, wherein providing said fitting having said first and second ends comprises providing said fitting having tapered first and second ends.

55. The method according to claim 54, wherein providing said fitting having tapered first and second ends comprises providing said tapered first and second ends with a taper of substantially 3 to 10 degrees.

56. The method according to claim 54, further comprising positioning a tensioning ring around each of said first and second fitting ends; and forcing said first and second fitting ends proximal

said first and second pipes with said tensioning ring after inserting said first and second pipes in said first and second fitting ends.

57. The method according to claim 56, further comprising positioning a support member within said first and second pipes before forcing said first and second fitting ends proximal said first and second pipes for supporting said first and second pipes and said fitting while applying said force with said tensioning ring.

58. The method according to claim 52, wherein providing said first and second pipes comprises providing said first and second pipes having diameters of at least about eighteen inches.

59. A method of forming an electrofusion pipe joint, comprising:

providing a first member having a spigot end and an outer surface;

providing a second member having a tapered bell end and an inner surface;

embedding a heating element in one of said spigot end of said first member and said bell end of said second member;

inserting said spigot end of said first member into said bell end of said second member;

compressing said bell end of said second member proximal said first member;

melting said first and second member proximal said heating element by supplying power to said heating element to create a melt zone proximal said heating element in said spigot end of said first member and in said bell end of said second member; and

cooling said melted member to fuse said first and second members together.

60. The method of forming an electrofusion pipe joint according to claim 59, further comprising:

inserting an insert ring within said first and second members before forcing said bell end of said second member proximal said first member for resisting force applied by said tensioning ring.

61. The method of forming an electrofusion pipe joint according to claim 59, wherein:

said inserting comprises inserting said spigot end of said first member into said bell end of said second member, wherein said outer surface of said first member and said inner surface of said second member are substantially non-parallel.

62. The method of forming an electrofusion pipe joint according to claim 59, further comprising:

positioning a tensioning ring around said bell end of said second member to compress said bell end.

63. The method of forming an electrofusion pipe joint according to claim 59, wherein:

providing a second member having a tapered bell end comprises providing a second member having a first and second tapered bell ends;

providing a third member having a spigot end;

embedding a first heating element in one of said spigot end of said first member and said first tapered bell end of said second member;

embedding a second heating element in one of said spigot end of said third member and said second tapered bell end of said second member;

inserting said spigot end of said first pipe into said first tapered bell end of said second member;

inserting said spigot end of said third pipe into said second tapered bell end of said second member;

melting said first, second and third members proximal said first and second heating elements by supplying power to said first and second heating elements to create a melt zone proximal said first and second heating elements; and

cooling said melted first, second and third members to fuse said first, second and third members together.

64. An electrofusion pipe joint, comprising:

a first member having a spigot end and an outer surface;

a second member having a tapered bell end for receiving said spigot end of said first member and an inner surface, wherein said outer surface of said first member and said inner surface of said second member are substantially non-parallel; and

a heating element embedded in one of said spigot end of said first member or in said bell end of said second member for creating a melt zone proximal said heating element when supplying said heating element with power.

65. The electrofusion pipe joint according to claim 64, further comprising:

a third member having a spigot end and an outer surface; said second member has first and second tapered ends for receiving the spigot end of the first member and the spigot end of the third member, wherein said outer surface of said first member and said second member are substantially non-parallel, and wherein said outer surface of said third member and said inner surface of said second member are substantially non-parallel.

66. The electrofusion pipe joint of claim 64, wherein said bell end of said second member has a taper of about 3 to 10 degrees to facilitate receiving said spigot end of said first member.

67. The electrofusion pipe joint of claim 64, wherein said heating element has a substantially zig-zag shape.

68. The electrofusion pipe joint of claim 64, wherein said heating element has a substantially helical shape.

69. The electrofusion pipe joint of claim 64, wherein said first and second pipes are thermoplastic polymers.

70. The electrofusion pipe joint of claim 64, further comprising:

a ring positioned around said bell end of said second member for forcing said second member proximal said first member.

71. The electofusion pipe joint of claim 68, further comprising:

an insert positioned within said first member and said second member for resisting force applied by said ring.

72. The electrofusion pipe joint of claim 64, wherein an outer surface of the second member is not tapered.